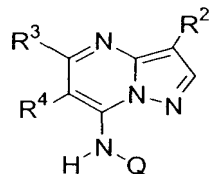


CLAIMS

What is claimed is:

1. A compound represented by the structural formula:

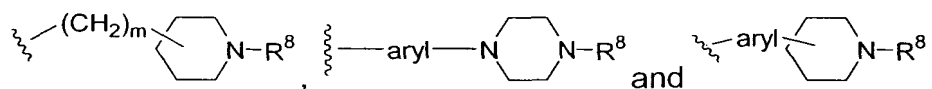
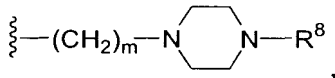


Formula III

wherein:

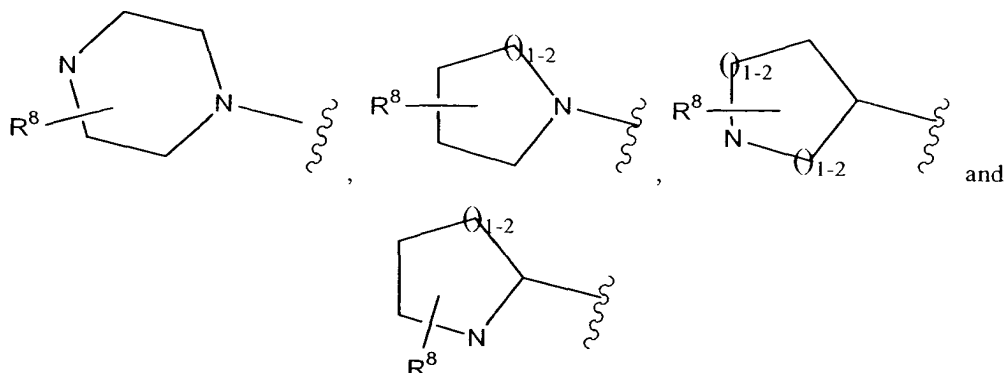
Q is selected from the group consisting of $-\text{S}(\text{O}_2)\text{NR}^6\text{R}^7-$, $-\text{C}(\text{O})\text{NR}^6\text{R}^7-$ and $-\text{C}(\text{O})\text{OR}^7-$;

R^2 is selected from the group consisting of R^9 , alkyl, alkynyl, alkynylalkyl, cycloalkyl, $-\text{CF}_3$, $-\text{C}(\text{O}_2)\text{R}^6$, aryl, arylalkyl, heteroarylalkyl, heterocyclyl, alkyl substituted with 1-6 R^9 groups which can be the same or different and are independently selected from the list of R^9 shown later below,



wherein the aryl in the above-noted definitions for R^2 can be unsubstituted or optionally substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, CN, $-\text{OR}^5$, SR^5 , $-\text{S}(\text{O}_2)\text{R}^6$, $-\text{S}(\text{O}_2)\text{NR}^5\text{R}^6$, $-\text{NR}^5\text{R}^6$, $-\text{C}(\text{O})\text{NR}^5\text{R}^6$, CF_3 , alkyl, aryl and OCF_3 ;

R^3 is selected from the group consisting of H, halogen, alkyl, alkynyl, $-\text{C}(\text{O})\text{NR}^5\text{R}^6$, $-\text{C}(\text{O})\text{OR}^4$, $-\text{NR}^5\text{R}^6$, cycloalkyl, cycloalkylalkyl, aryl, arylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl,



wherein each of said alkyl, cycloalkyl, aryl, arylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl and heteroarylalkyl for R^3 and the heterocyclyl

- 5 moieties whose structures are shown immediately above for R^3 can be substituted or optionally independently substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, alkyl, aryl, cycloalkyl, CF_3 , CN, $-OCF_3$, $-(CR^4R^5)_nOR^5$, $-OR^5$, $-NR^5R^6$, $-(CR^4R^5)_nNR^5R^6$, $-C(O_2)R^5$, $-C(O)R^5$, $-C(O)NR^5R^6$,
 10 $-SR^6$, $-S(O_2)R^6$, $-S(O_2)NR^5R^6$, $-N(R^5)S(O_2)R^7$, $-N(R^5)C(O)R^7$ and $-N(R^5)C(O)NR^5R^6$;

R^4 is H, halo or alkyl;

R^5 is H or alkyl;

- R^6 is selected from the group consisting of H, alkyl, aryl, arylalkyl, cycloalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, and heteroarylalkyl,
 15 wherein each of said alkyl, aryl, arylalkyl, cycloalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, and heteroarylalkyl can be unsubstituted or optionally substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of
 20 halogen, alkyl, aryl, cycloalkyl, heterocyclylalkyl, CF_3 , OCF_3 , CN, $-OR^5$, $-NR^5R^{10}$, $-N(R^5)Boc$, $-(CR^4R^5)_nOR^5$, $-C(O_2)R^5$, $-C(O)R^5$, $-C(O)NR^5R^{10}$, $-SO_3H$, $-SR^{10}$, $-S(O_2)R^7$, $-S(O_2)NR^5R^{10}$, $-N(R^5)S(O_2)R^7$, $-N(R^5)C(O)R^7$ and $-N(R^5)C(O)NR^5R^{10}$;

- R^{10} is selected from the group consisting of H, alkyl, aryl, arylalkyl, cycloalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, and heteroarylalkyl,
 25 wherein each of said alkyl, aryl, arylalkyl, cycloalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, and heteroarylalkyl can be unsubstituted or

optionally substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, alkyl, aryl, cycloalkyl, heterocyclylalkyl, CF_3 , OCF_3 , CN , $-\text{OR}^5$, $-\text{NR}^4\text{R}^5$, $-\text{N}(\text{R}^5)\text{Boc}$, $-(\text{CR}^4\text{R}^5)_n\text{OR}^5$, $-\text{C}(\text{O}_2)\text{R}^5$, $-\text{C}(\text{O})\text{NR}^4\text{R}^5$, $-\text{C}(\text{O})\text{R}^5$, $-\text{SO}_3\text{H}$, $-\text{SR}^5$,
 5 $-\text{S}(\text{O}_2)\text{R}^7$, $-\text{S}(\text{O}_2)\text{NR}^4\text{R}^5$, $-\text{N}(\text{R}^5)\text{S}(\text{O}_2)\text{R}^7$, $-\text{N}(\text{R}^5)\text{C}(\text{O})\text{R}^7$ and $-\text{N}(\text{R}^5)\text{C}(\text{O})\text{NR}^4\text{R}^5$;
 or optionally (i) R^5 and R^{10} in the moiety $-\text{NR}^5\text{R}^{10}$, or (ii) R^5 and R^6 in the moiety $-\text{NR}^5\text{R}^6$, may be joined together to form a cycloalkyl or heterocyclyl moiety, with each of said cycloalkyl or heterocyclyl moiety being unsubstituted or optionally independently being substituted with one or more R^9 groups;

10 R^7 is selected from the group consisting of alkyl, cycloalkyl, aryl, heteroaryl, arylalkyl and heteroarylalkyl, wherein each of said alkyl, cycloalkyl, heteroarylalkyl, aryl, heteroaryl and arylalkyl can be unsubstituted or optionally independently substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of
 15 halogen, alkyl, aryl, cycloalkyl, CF_3 , OCF_3 , CN , $-\text{OR}^5$, $-\text{NR}^5\text{R}^{10}$, $-\text{CH}_2\text{OR}^5$, $-\text{C}(\text{O}_2)\text{R}^5$, $-\text{C}(\text{O})\text{NR}^5\text{R}^{10}$, $-\text{C}(\text{O})\text{R}^5$, $-\text{SR}^{10}$, $-\text{S}(\text{O}_2)\text{R}^{10}$, $-\text{S}(\text{O}_2)\text{NR}^5\text{R}^{10}$, $-\text{N}(\text{R}^5)\text{S}(\text{O}_2)\text{R}^{10}$, $-\text{N}(\text{R}^5)\text{C}(\text{O})\text{R}^{10}$ and $-\text{N}(\text{R}^5)\text{C}(\text{O})\text{NR}^5\text{R}^{10}$;

R^8 is selected from the group consisting of R^6 , $-\text{C}(\text{O})\text{NR}^5\text{R}^{10}$, $-\text{S}(\text{O}_2)\text{NR}^5\text{R}^{10}$, $-\text{C}(\text{O})\text{R}^7$ and $-\text{S}(\text{O}_2)\text{R}^7$;

20 R^9 is selected from the group consisting of halogen, CN , $-\text{NR}^5\text{R}^{10}$, $-\text{C}(\text{O}_2)\text{R}^6$, $-\text{C}(\text{O})\text{NR}^5\text{R}^{10}$, $-\text{OR}^6$, $-\text{SR}^6$, $-\text{S}(\text{O}_2)\text{R}^7$, $-\text{S}(\text{O}_2)\text{NR}^5\text{R}^{10}$, $-\text{N}(\text{R}^5)\text{S}(\text{O}_2)\text{R}^7$, $-\text{N}(\text{R}^5)\text{C}(\text{O})\text{R}^7$ and $-\text{N}(\text{R}^5)\text{C}(\text{O})\text{NR}^5\text{R}^{10}$;

m is 0 to 4, and

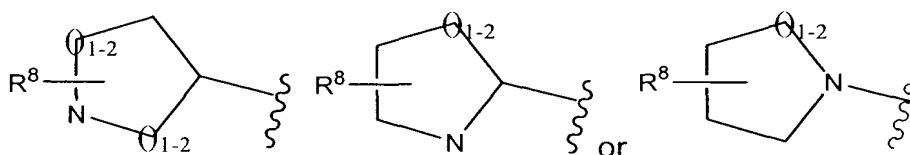
n is 1 to 4.

25 2. The compound of claim 1, wherein R^6 is H and R^7 is unsubstituted aryl, unsubstituted heteroaryl, aryl substituted with 1-3 moieties (which moieties can be the same or different with each moiety being independently selected from the group consisting of phenyl, pyridyl, thiophenyl, halogen, cyano, $-\text{OR}^5$, $-\text{S}(\text{O}_2)\text{R}^6$, CF_3 , alkyl and $-\text{OCF}_3$), and heteroaryl substituted with 1-3 moieties aryl fused
 30 with an aryl or heteroaryl group (which aryl or heteroaryl may be unsubstituted or optionally substituted with 1-3 moieties which moieties can be the same or

different with each moiety being independently selected from the group consisting of phenyl, pyridyl, thiophenyl, furanyl and thiazolyl, halogen, cyano, -OR⁵, -SR⁵, -S(O₂)R⁶, -S(O₂)NR⁵R⁶, -NR⁵R⁶, -C(O)NR⁵R⁶, CF₃, alkyl and -OCF₃);

- 5 R² is halogen, CF₃, CN, lower alkyl, -CH₂-OR⁶, -OR⁶, cycloalkyl, aryl or heteroaryl; and

 R³ is H, halogen, lower alkyl, aryl, heteroaryl, -C(O)OR⁴, cycloalkyl, -NR⁵R⁶, heterocyclalkyl,

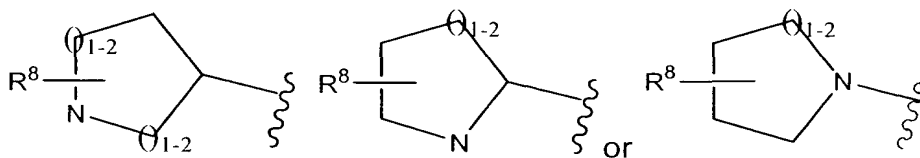


- 10 wherein each of said alkyl, aryl, heteroaryl, heterocyclalkyl and cycloalkyl for R³ are unsubstituted or optionally independently substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, CF₃, OCF₃, lower alkyl, CN and OR⁵.

3. The compound of claim 1, wherein R¹⁰ is H and R⁷ is unsubstituted aryl,
 15 unsubstituted heteroaryl, aryl substituted with 1-3 moieties (which moieties can be the same or different with each moiety being independently selected from the group consisting of phenyl, pyridyl, thiophenyl, halogen, cyano, -OR⁵, -S(O₂)R⁶, CF₃, alkyl and -OCF₃), and heteroaryl substituted with 1-3 moieties aryl fused
 20 with an aryl or heteroaryl group (which aryl or heteroaryl may be unsubstituted or optionally substituted with 1-3 moieties which moieties can be the same or different with each moiety being independently selected from the group consisting of phenyl, pyridyl, thiophenyl, furanyl and thiazolyl, halogen, cyano, -OR⁵, -SR⁵, -S(O₂)R⁶, -S(O₂)NR⁵R⁶, -NR⁵R⁶, -C(O)NR⁵R⁶, CF₃, alkyl and -OCF₃);

- 25 R² is halogen, CF₃, CN, lower alkyl, -CH₂-OR⁶, -OR⁶, cycloalkyl, aryl or heteroaryl; and

 R³ is H, halogen, lower alkyl, aryl, heteroaryl, -C(O)OR⁴, cycloalkyl, -NR⁵R⁶, heterocyclalkyl, cycloalkylalkyl,

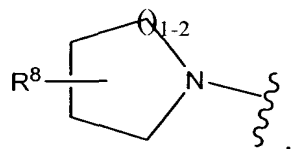
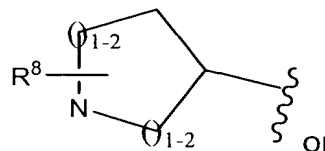


wherein each of said alkyl, aryl, heteroaryl, heterocyclyl and cycloalkyl for R^3 are unsubstituted or optionally independently substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, CF_3 , OCF_3 , lower alkyl, CN and OR^5 .

4. The compound of claim 2, wherein R^2 is halogen, $-CH_2OR^6$, CN, CF_3 , lower alkyl, cyclopropyl, $C(O)OR^6$, $-OR^6$, or aryl.

5. The compound of claim 2, wherein R^3 is H, lower alkyl, cycloalkyl, -

$C(O)OR^4$, aryl, heteroaryl, cycloalkylalkyl,



wherein each of said alkyl, aryl, cycloalkyl, heteroaryl, and the heterocyclyl moieties shown above for R^3 are optionally independently substituted with one or more moieties which can be the same or different, each moiety being independently selected from the group consisting of halogen, CF_3 , lower alkyl, OMe, aryl, cyclopropyl, and CN.

6. The compound of claim 2, wherein R^4 is H.

7. The compound of claim 2, wherein R^5 is H.

8. The compound of claim 2, wherein R^6 is H and R^7 is unsubstituted aryl.

9. The compound of claim 2, wherein R^6 is H and R^7 is unsubstituted heteroaryl.

10. The compound of claim 9, wherein R^7 is 4-pyridyl.

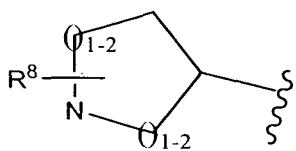
11. The compound of claim 2, wherein R^7 is 4-pyridyl-N-oxide.

12. The compound of claim 2, wherein R^7 is 4-pyridyl and Q is $-SO_2-NHR^7$.

13. The compound of claim 2, wherein R^7 is 4-pyridyl-N-oxide and Q is

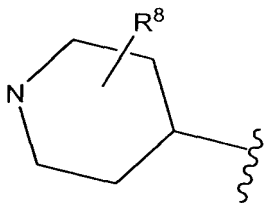
-C(O)-NHR⁷-.

14. The compound of claim 3, wherein said R² is Br.
15. The compound of claim 3, wherein said R² is Cl.
16. The compound of claim 3, wherein R² is isopropyl or ethyl.
- 5 17. The compound of claim 3, wherein R² is -CH₂OH or -CH₂OCH₃.
18. The compound of claim 3, wherein R² is cyclopropyl.
19. The compound of claim 3, wherein R² is CN.
20. The compound of claim 5, wherein R³ is lower alkyl, cycloalkyl,

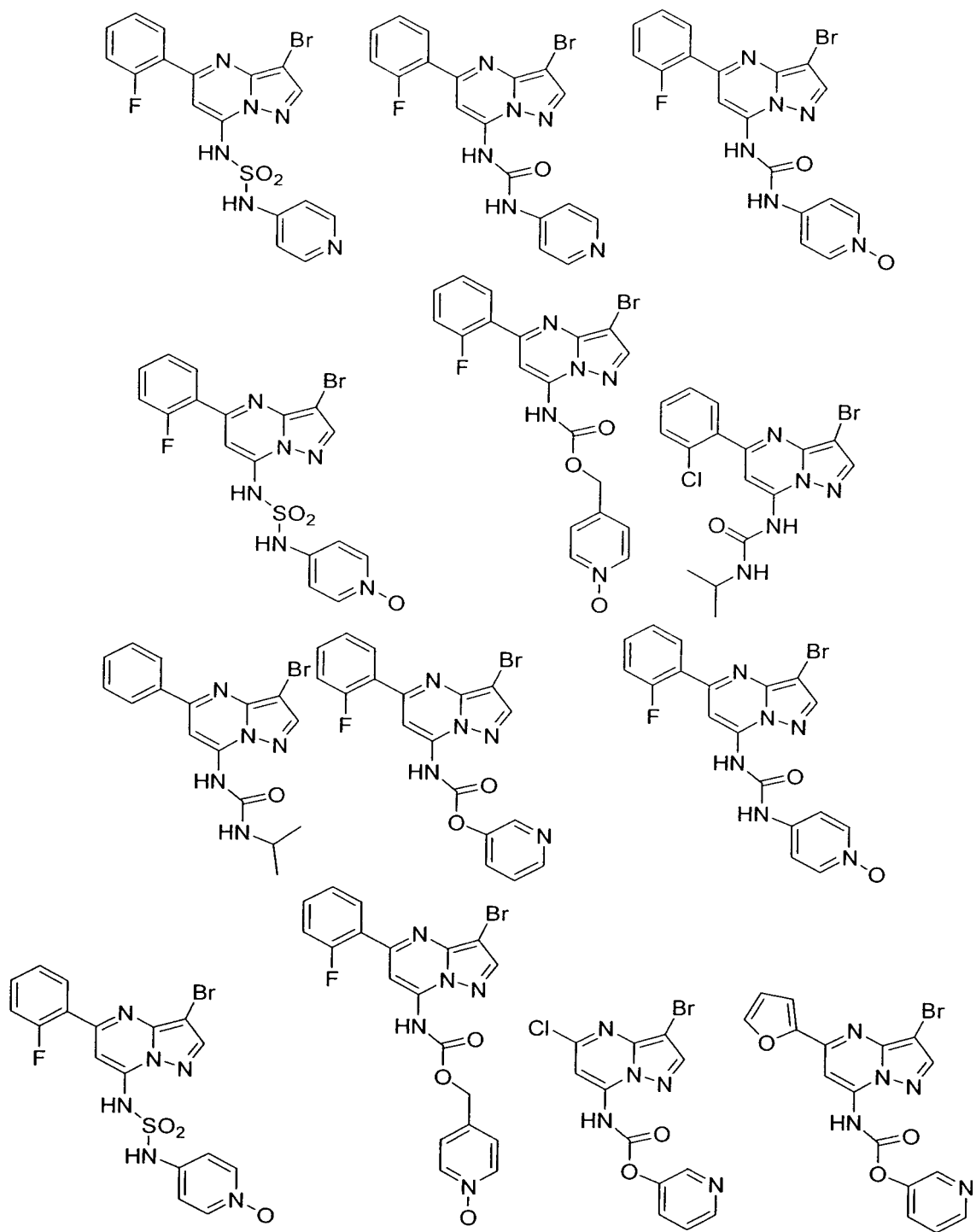


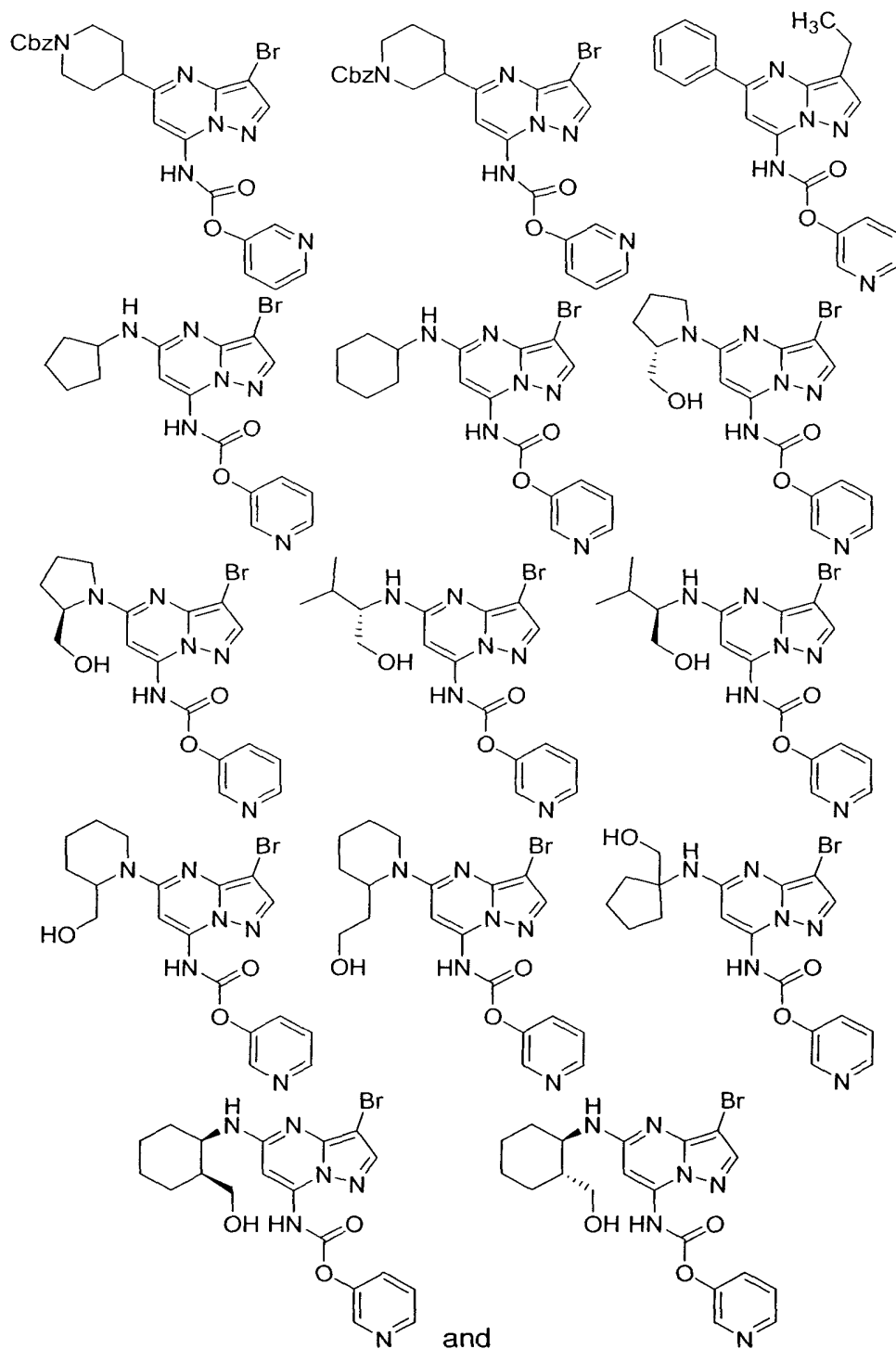
cycloalkylalkyl, aryl or

- 10 21. The compound of claim 20, wherein R³ is isopropyl.
22. The compound of claim 20, wherein R³ is:



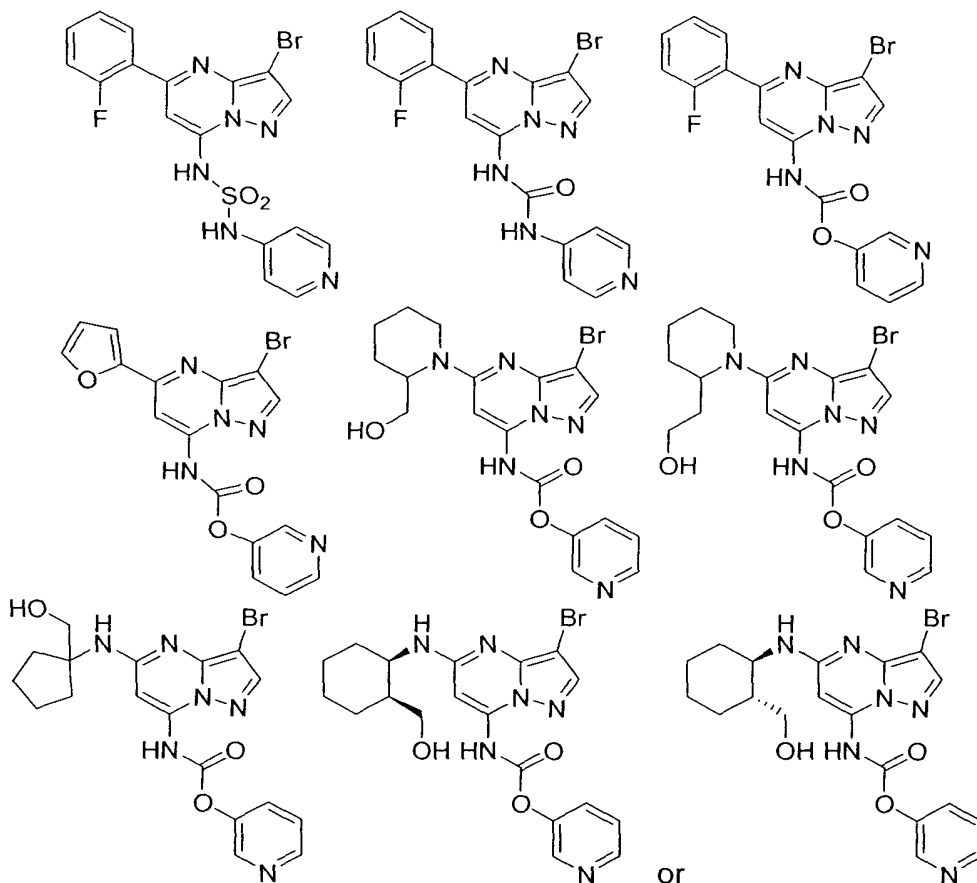
23. The compound of claim 20, wherein R³ is unsubstituted phenyl.
24. The compound of claim 5, wherein R⁸ is -(CH₂)_nOH or -(CH₂)_nOCH₃,
- 15 where n is 1 or 2.
25. The compound of claim 20, wherein R³ is a phenyl substituted with one or moieties selected from the group consisting of F, Br, Cl, lower alkyl, alkoxy and CF₃.
26. A compound selected from the group consisting of:





or a pharmaceutically acceptable salt or solvate thereof.

27. A compound of the formula:



5 or a pharmaceutically acceptable salt or solvate thereof.

28. A method of inhibiting one or more cyclin dependent kinases, comprising administering a therapeutically effective amount of at least one compound of claim 1 to a patient in need of such inhibition.

29. A method of treating one or more diseases associated with cyclin
10 dependent kinase, comprising administering a therapeutically effective amount of at least one compound of claim 1 to a patient in need of such treatment.

30. The method of claim 29, wherein said cyclin dependent kinase is CDK2.

31. The method of claim 29, wherein said disease is selected from the group consisting of: cancer of the bladder, breast, colon, kidney, liver, lung, small cell
15 lung cancer, esophagus, gall bladder, ovary, pancreas, stomach, cervix, thyroid, prostate, and skin, squamous cell carcinoma; leukemia, acute lymphocytic leukemia, acute lymphoblastic leukemia, B-cell lymphoma, T- cell lymphoma,

Hodgkins lymphoma, non-Hodgkins lymphoma, hairy cell lymphoma, Burkett's lymphoma; acute and chronic myelogenous leukemia, myelodysplastic syndrome, promyelocytic leukemia; fibrosarcoma, rhabdomyosarcoma; astrocytoma, neuroblastoma, glioma and schwannomas; melanoma, seminoma, teratocarcinoma, osteosarcoma, xenoderma pigmentosum, keratocanthoma, thyroid follicular cancer and Kaposi's sarcoma.

32. A method of treating one or more diseases associated with cyclin dependent kinase, comprising administering to a mammal in need of such treatment

10 an amount of a first compound, which is a compound of claim 1, or a pharmaceutically acceptable salt or solvate thereof; and

an amount of at least one second compound, said second compound being an anti-cancer agent;

15 wherein the amounts of the first compound and said second compound result in a therapeutic effect.

33. The method of claim 32, further comprising radiation therapy.

34. The method of claim 32, wherein said anti-cancer agent is selected from the group consisting of a cytostatic agent, cisplatin, doxorubicin, taxotere, taxol, etoposide, irinotecan (or CPT-11), camptostar, topotecan, paclitaxel, docetaxel, 20 epothilones, tamoxifen, 5-fluorouracil, methotrexate, 5-Fluorouracil, temozolomide, cyclophosphamide, 4-[2-[4-[(11R)-3,10-dibromo-8-chloro-6,11-dihydro-5H-benzo[5,6]cyclohepta[1,2-b]pyridin-11-yl]-1-piperidinyl]-2-oxoethyl]-1-piperidinecarboxamide, tipifarnib, L778,123 (a farnesyl protein transferase inhibitor), BMS 214662 (a farnesyl protein transferase inhibitor), Iressa, Tarceva, 25 antibodies to EGFR, Gleevec, intron, ara-C, adriamycin, cytoxan, gemcitabine, Uracil mustard, Chloromethine, Ifosfamide, Melphalan, Chlorambucil, Pipobroman, Triethylenemelamine, Triethylenethiophosphoramine, Busulfan, Carmustine, Lomustine, Streptozocin, Dacarbazine, Floxuridine, Cytarabine, 30 6-Mercaptopurine, 6-Thioguanine, Fludarabine phosphate, oxaliplatin, leucovirin, oxaliplatin, Pentostatine, Vinblastine, Vincristine, Vindesine, Bleomycin,

- Dactinomycin, Daunorubicin, Doxorubicin, Epirubicin, Idarubicin, Mithramycin, Deoxycoformycin, Mitomycin-C, L-Asparaginase, Teniposide 17 α -Ethinylestradiol, Diethylstilbestrol, Testosterone, Prednisone, Fluoxymesterone, Dromostanolone propionate, Testolactone, Megestrolacetate,
- 5 Methylprednisolone, Methyltestosterone, Prednisolone, Triamcinolone, Chlorotrianisene, Hydroxyprogesterone, Aminoglutethimide, Estramustine, Medroxyprogesteroneacetate, Leuprolide, Flutamide, Toremifene, goserelin, Cisplatin, Carboplatin, Hydroxyurea, Amsacrine, Procarbazine, Mitotane, Mitoxantrone, Levamisole, Navelbene, Anastrozole, Letrazole, Capecitabine,
- 10 Reloxafine, Droloxafine, or Hexamethylmelamine.
35. A pharmaceutical composition comprising a therapeutically effective amount of at least one compound of claim 1 in combination with at least one pharmaceutically acceptable carrier.
36. The pharmaceutical composition of claim 35, additionally comprising one
- 15 or more anti-cancer agents selected from the group consisting of cytostatic agent, cisplatin, doxorubicin, taxotere, taxol, etoposide, CPT-11, irinotecan, camptostar, topotecan, paclitaxel, docetaxel, epothilones, tamoxifen, 5-fluorouracil, methoxtrexate, 5-fluorouracil, temozolomide, cyclophosphamide, 4-[2-[4-[(11R)-3,10-dibromo-8-chloro-6,11-dihydro-5H-benzo[5,6]cyclohepta[1,2-
- 20 b]pyridin-11-yl]-1-piperidiny]-2-oxoehtyl]-1-piperidinecarboxamide, Zarnestra[®] (tipifarnib), L778,123 (a farnesyl protein transferase inhibitor), BMS 214662 (a farnesyl protein transferase inhibitor), Iressa, Tarceva, antibodies to EGFR, Gleevec, intron, ara-C, adriamycin, cytoxan, gemcitabine, Uracil mustard, Chlormethine, Ifosfamide, Melphalan, Chlorambucil, Pipobroman,
- 25 Triethylenemelamine, Triethylenethiophosphoramine, Busulfan, Carmustine, Lomustine, Streptozocin, Dacarbazine, Floxuridine, Cytarabine, 6-Mercaptopurine, 6-Thioguanine, Fludarabine phosphate, Pentostatine, Vinblastine, Vincristine, Vindesine, Bleomycin, Dactinomycin, Daunorubicin, Doxorubicin, Epirubicin, Idarubicin, Mithramycin, Deoxycoformycin, Mitomycin-C,
- 30 L-Asparaginase, Teniposide 17 α -Ethinylestradiol, Diethylstilbestrol, Testosterone, Prednisone, Fluoxymesterone, Dromostanolone propionate,

- Testolactone, Megestrolacetate, Methylprednisolone, Methyltestosterone, Prednisolone, Triamcinolone, Chlorotrianisene, Hydroxyprogesterone, Aminoglutethimide, Estramustine, Medroxyprogesteroneacetate, Leuprolide, Flutamide, Toremifene, goserelin, Cisplatin, Carboplatin, Hydroxyurea,
- 5 Amsacrine, Procarbazine, Mitotane, Mitoxantrone, Levamisole, Navelbene, Anastrozole, Letrozole, Capecitabine, Reloxafine, Droloxafine, or Hexamethylmelamine.
37. A compound of claim 1, in isolated and purified form.